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A NEW SPECIES OF MARINE LEECHES (HIRUDINEA, PISCICOLIDAE) FROM THE COASTAL WATERS OF SOUTH AFRICA

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A New Species of Marine Leeches (Hirudinea, Piscicolidae) from the Coastal Waters of South Africa. Utevsky A. Yu. — The marine piscicolid leech *Austrobdella oosthuizeni* A. Utevsky, sp. n. from the coastal waters of South Africa is described and illustrated. The body is up to 9.7 mm long, trachelosome subcylindrical, urosome flattened without pulsatile vesicles; body unpigmented, semitransparent; eyes and ocelli absent (in fixed specimens). The specimens were collected on *Jassus lalandii* (Crustacea, Decapoda).

Key words: *Austrobdella oosthuizeni* sp. n., Hirudinea, Piscicolidae, *Jassus lalandii*, South Africa.

Новый вид морских пиявок (Hirudinea, Piscicolidae) из прибрежных вод Южной Африки. Утевский А. Ю. — Описана морская рыбья пиявка *Austrobdella oosthuizeni* A. Utevsky, sp. n. из прибрежных вод Южной Африки. Экземпляры достигают длины 9,7 мм, трахелосома субцилиндрическая, уросома уплощенная без боковых пузырей; тело не пигментировано, полупрозрачное; глаза и глазки отсутствуют (у фиксированных экземпляров). Все экземпляры собраны с лобстера *Jassus lalandii* (Crustacea, Decapoda).

Ключевые слова: *Austrobdella oosthuizeni* sp. n., Hirudinea, Piscicolidae, *Jassus lalandii*, Южная Африка.

Introduction

The only one species of piscicolid leeches *Malmiana stellata* (Moore, 1958) has been recorded from the coastal waters of South Africa (Natal). However, the leech fauna of this region was found to be more diverse than considered before. The leech described in this paper was collected in October–November 1968. Thirty specimens (3 lots) of the species were collected by J. H. Oosthuizen (University of Pretoria) at Bloubergstrand (RSA) on *Jassus lalandii*.

Material and methods

Leeches were preserved in 10% formalin or in 70% ethanol. Two individuals of *Austrobdella oosthuizeni* sp. n. were embedded in paraffin; transverse sections were cut at 5 mkm and stained with Mallory's triple stain. Two individuals were longitudinally dissected for examining the reproductive and digestive systems. The holotype and paratypes *of Austrobdella oosthuizeni* sp. n. are deposited in the Zoological Museum of the National Academy of Sciences of Ukraine (Kyiv). Other specimens are in the collection of the Department of Zoology and Animal Ecology of the Kharkiv National University (Ukraine).

FAMILY PISCICOLIDAE JOHNSTON, 1865
SUBFAMILY PLATYBDELLINAE EPSTEIN, 1970
Genus *Austrobdella* Badham, 1916

Type species: *Austrobdella translucens* Badham, 1916.

Diagnoses for this genus were proposed by C. Badham (1916), D. Ingram (1957), and R. Sawyer (1986). There is a need to make up a new diagnosis due to new information obtained during this research.

Diagnosis. Small leeches. Body flattened, distinctly divided into trachelosome and urosome, surface smooth, without ornamentation. Complete somite 6-annulate, without segmental ocelli and pigment bands.

Anterior sucker small, distinctly separated from trachelosome, surface smooth, eye-like spots present or absent.

Posterior sucker small or medium sized, distinctly separated from urosome, surface smooth, ocelli absent.

Digestive system. Oesophageal diverticula present or absent. Crop chambers well-developed. Posterior crop caeca fused in different degree. Intestine with chambers.

Reproductive system. Bursa long, accessory glands present. Conductive tissue present or absent, copulatory area absent.

Coelomic system. Dorsal, ventral, marginal and testicular lacunae present. Main and accessory communications present or absent.

Marine.

Austrobdella oosthuizeni A. Utevsky, **sp. n.** (fig. 1–3)

Material. Holotype N 29; paratypes N 33 (on slides), 34, 35 (on slides) are in the Zoological Museum of the National Academy of Science of Ukraine (Kyiv).

Diagnosis. Maximum body length, 9.7 mm, trachelosome subcylindrical, urosome flattened, anterior and posterior suckers well-developed, eyes and ocelli on suckers and body absent; complete somite 6 (12) annulate; body unpigmented, semitransparent; posterior crop caeca totally fused; ovisacs small, vagina long.

Type locality. Bloubergstrand, coastal waters, South Africa.

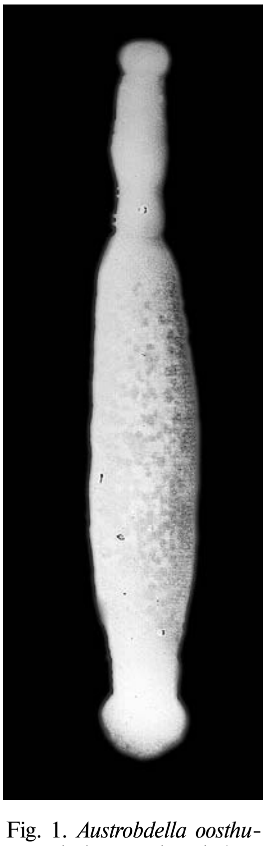


Fig. 1. *Austrobdella oosthuizeni*, holotype, dorsal view.

Рис. 1. *Austrobdella oosthuizeni*, голотип, дорсально.

Etymology. Named in honour of Dr. J. H. Oosthuizen, Department of Zoology, University of Pretoria, Pretoria, for his many contributions to hirudinology.

External features (fig. 2, *A*, *B*). Small leeches (length without suckers, 9.7 mm; width, 2.3 mm). Body short and wide (length/width ratio, 4.2), distinctly divided into subcylindrical trachelosome and flattened urosome with "shoulders". Surface smooth, unpigmented, semitransparent, without segmental ocelli.

Anterior sucker small (diameter smaller than maximum body width), distinctly separated from trachelosome, eccentrically attached. Surface smooth; eyes, ocelli, eyes-like spots absent; mouth-pore centrally located.

Posterior sucker medium sized (diameter approximately equal to maximum body width, and 1.5 times larger than diameter of anterior sucker), centrally attached, directed anteriorly. Surface smooth, ocelli absent.

Annulation of clitellum (fig. 2, *B*) indistinct, external copulatory area absent. Complete somite includes 6 double rings. Anus separated by 2 annuli from posterior sucker.

Digestive system (fig. 2, *C*). Base of proboscis located at ganglion 2 of ventral nerve cord. Oesophageal diverticula absent. Crop with 5 large chambers enlarged from first to last. Posterior crop caeca totally fused without fenestrae, lateral processes and chambers absent. Intestine with 2 chambers bearing lateral processes. Rectal dilatation located posterior to posterior crop caeca

Reproductive system (fig. 2, *D*, *E*). Five pairs of testisacs present. Seminal reservoirs well-developed, forming some loops between ganglia 7 and 8 of ventral nerve cord. Initial parts of

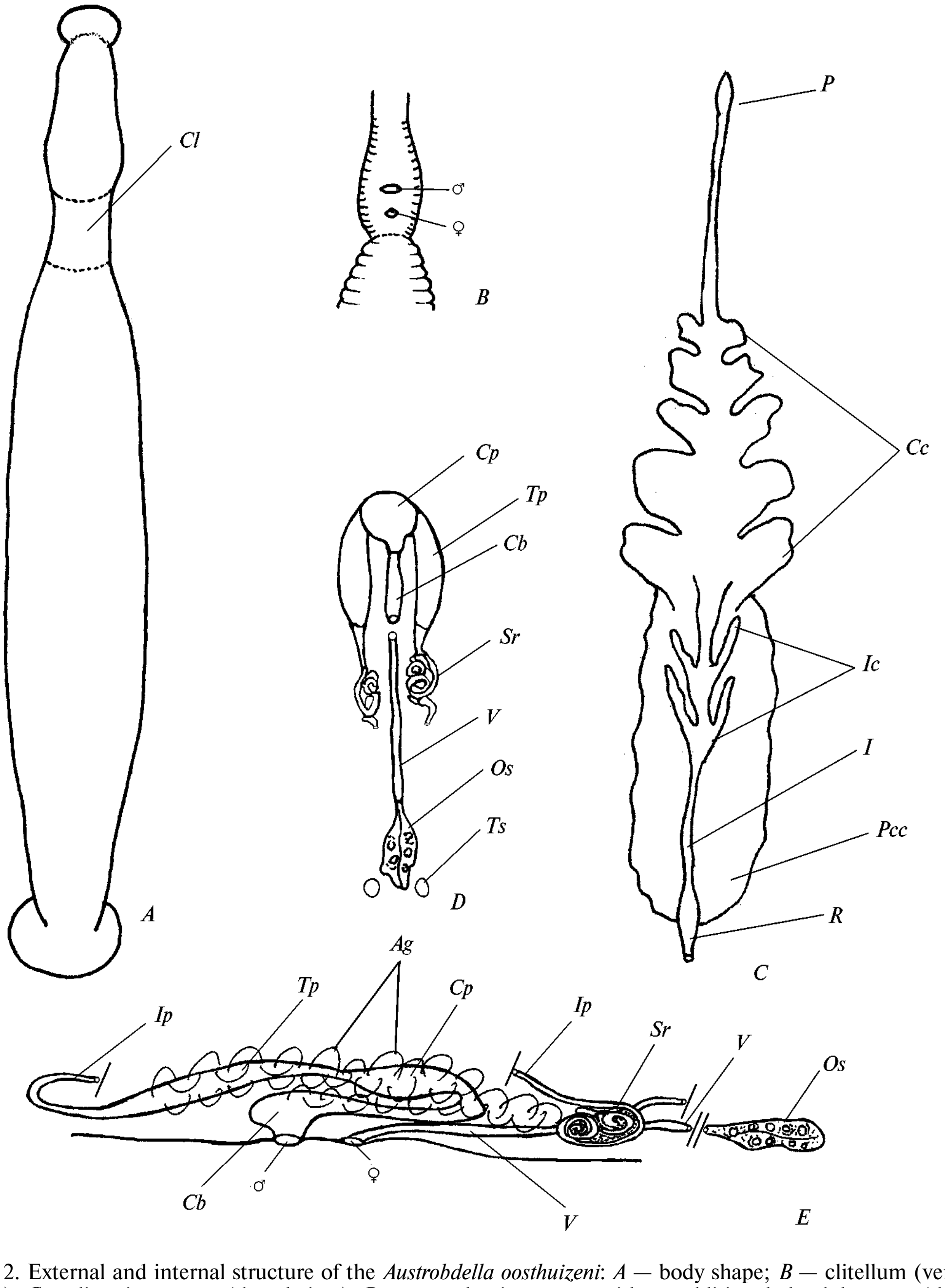


Fig. 2. External and internal structure of the *Austrobdella oosthuizeni*: *A* — body shape; *B* — clitellum (ventral view); *C* — digestive system (dorsal view); *D* — reproductive system without additional glandular mass (dorsal view); *E* — lateral view of reproductive system (reconstruction from serial sections); *Ag* — accessory glandular mass; *Cb* — copulatory bursa; *Cp* — common part of ejaculatory ducts; *Cc* — crop chambers; *Cl* — clitellum; *I* — intestine; *Ic* — intestine chambers; *Ip* — initial part of ejaculatory duct; *Os* — ovisacs; *P* — proboscis; *Pec* — posterior crop caeca; *R* — rectum; *Sr* — seminal reservoir; *Tp* — terminal part of ejaculatory duct; *Ts* — testisacs; *V* — vagina.

Рис. 2. Внешнее и внутреннее строение *Austrobdella oosthuizeni*: *A* — форма тела; *B* — поясок (вентрально); *C* — пищеварительная система (дорсально); *D* — половая система (дорсально, придаточные железы не показаны); *E* — половая система (латерально, реконструкция по серийным срезам); *Ag* — придаточные железы; *Cb* — копуляционная сумка; *Cp* — общий отдел семяизвергательных каналов; *Cc* — камеры желудка; *Cl* — поясок; *I* — усваивающая кишка; *Ic* — камеры усваивающей кишки; *Ip* — начальные отделы семяизвергательных каналов; *Os* — яйцевые мешки; *P* — хоботок; *Pec* — слепые мешки; *R* — ректум; *Sr* — семенные резервуары; *Tp* — концевые отделы семяизвергательных каналов; *Ts* — семенные мешки; *V* — влагалище.

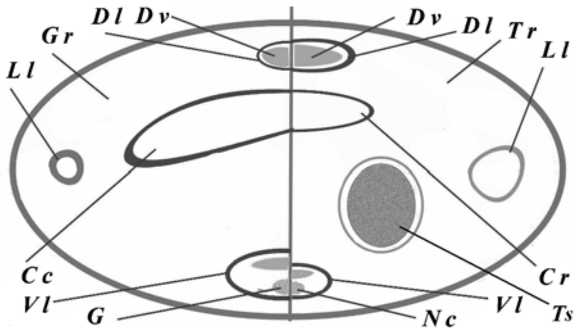


Fig. 3. Model of lacunar system of the *Austrobdella oosthuizeni*: *Gr* — ganglion region; *T* — testisac region; *Cc* — crop chamber; *Cr* — crop; *Dl* — dorsal lacuna; *Dv* — dorsal vessel; *G* — ganglia; *LI* — ateral lacuna; *Nc* — ventral nerve cord; *Ts* — testisac; *VI* — ventral lacuna with ventral vessel.

Рис. 3. Модель лакунарной системы *Austrobdella oosthuizeni*: *Gr* — область ганглия; *T* — область семенных мешков; *Cc* — камера желудка; *Cr* — желудок; *Dl* — спинная лакуна; *Dv* — спинной сосуд; *G* — ганглий; *LI* — латеральная лакуна; *Nc* — брюшная нервная цепочка; *Ts* — семенной мешок; *VI* — брюшная лакуна с брюшным сосудом.

ejaculatory ducts long, thin, loop-like, extending to ganglion 2 of ventral nerve cord. Terminal parts long, wider than initial parts, located between ganglia 3 and 6. Common part of ejaculatory ducts voluminous, muscular, located between ganglia 5 and 7 of ventral nerve cord. Accessory glandular mass well-developed, located between ganglia 4 and 6, covering in part initial parts of ejaculatory ducts, terminal parts and common part of ejaculatory ducts. Bursa long may be coiled and extended posterior to ganglion 7 of ventral nerve cord. Ovisacs small, asymmetrical; located between ganglia 9 and 11 of ventral nerve cord (or extended to 4th pare of testisacs). Vagina long, tube-like. Conductive tissue and copulatory area absent.

Coelomic system (fig. 3). Consisting of dorsal, ventral, testicular and marginal lacunae with muscular layer. Main and accessory communications absent. Dorsal and marginal lacunae forming small dilatations in testicular region of somite.

Discussion

The species described here is assigned to the genus *Austrobdella* Badham, 1916 which includes four species: *A. translucens* Badham, 1916; *A. anoculata* Moore, 1940; *A. bilobata* Ingram, 1957; *A. californiana* Burreson, 1977. Belonging of the new species to the genus *Austrobdella* is confirmed by the distinct division of the body into subcylindrical trachelosome and flattened urosome with «shoulders»; 6-annular complete somite; voluminous crop chambers and intestinal chambers; fusion of posterior crop caeca; long copulatory bursa; presence of accessory glands; presence of marginal lacunae. *A. oosthuizeni* differs little from most representatives of the genus in the length of the body *(A. translucens*, 13 mm; *A. anoculata*, 6–8 mm; *A. californiana*, 15–35 mm), but the leech is distinctly smaller than *A. bilobata* (35 mm).

A. oosthuizeni differs from *A. translucens* and *A. californiana* by the absence of eyes; from *A. translucens*, *A. bilobata*, and *A. californiana* by the absence of oesophageal diverticula; from all the species by the number of crop chambers (*A. translucens*, *A. anoculata*, *A. californiana* have 6 chambers; *A. bilobata* has 12 chambers) and by the complete fusion of posterior crop caeca without fenestrae; from *A. translucens* and *A. bilobata* by the absence of the conductive tissue; from all the species by the very long vagina.

The considerable remoteness of localities of the new species and their parasitising on different hosts confirm a specific status of the described leech: *A. translucens* (Australia, East Antarctica) is parasitic on *Sillago ciliata*, *Notothenia* sp., and *Chaenocephalus* sp.; the host of *A. anoculata* (Greenland) is unknown; *A bilobata*

(Tasmania), on *Rhombosolea tapirina; A. californiana* (southern California–Pacific Ocean), on *Hippoglossina stomata*, *Pleuronichthis verticalis*, *P. decurrens*, and *Scorpaena guttata*; *A. oosthuizeni* (South Africa), on *Jassus lalandii.*

Finding of *A. oosthuizeni* on *Jassus lalandii* (Crustacea, Decapoda) suggests that the described leech uses crustaceans as a substrate for cocoon deposition but feed on the blood of fishes (Meyer, Barden, 1955), just as several other marine leeches do. However it must be emphasized that *Mysidobdella borealis* (Johanson, 1899) and *Glyptonotobdella antarctica* Sawyer et White, 1969 probably feed on their crustacean hosts (Burreson, Alien, 1978; Janssen, 1993).

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